



TETRA TECH

Project Manager

February 4, 2010

Mr. John Rajkowski (3HS12)
Site Assessment Manager
U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, Pennsylvania 19103

**Subject: Lead Smelter Sampling Trip Report
Electric Storage Battery Site
1901 Allegheny Avenue
Philadelphia, Pennsylvania
EPA Contract No. EP-S3-05-02
TDD No. E43-030-09-001
DTN: 0926**

Dear Mr. Rajkowski:

Tetra Tech EM Inc. (Tetra Tech) is submitting the trip report for the Electric Storage Battery site. As discussed in the trip report, lead levels detected in soils sampled by Tetra Tech exceeded the residential and industrial regional screening levels established for lead. Based on these results, Tetra Tech recommends that residents in the vicinity where the samples were collected be contacted regarding the potential risks associated with exposure to elevated levels of lead.

If you have any questions regarding the draft report, please contact me at (215) 364-2148.

Sincerely,

[Redacted Signature]

Project Manager

Enclosures (4)

cc: TDD File

**TRIP REPORT FOR THE
ELECTRIC STORAGE BATTERY SITE
SOIL SAMPLING EVENT
PHILADELPHIA, PENNSYLVANIA**

Prepared for

U.S. Environmental Protection Agency
1650 Arch Street
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Prepared by

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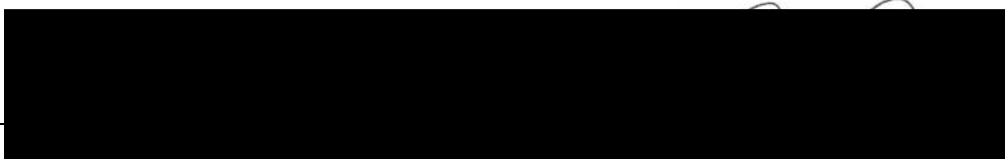
EPA Contract No. EP-S3-05-02

Technical Direction Document No. E43-030-09-09-001
Document Tracking No. 0926

February 4, 2010

Prepared by

Approved by

A large black rectangular redaction box covering the signatures of the Project Manager and START Site Assessment Manager.

Project Manager

START Site Assessment Manager

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1.0 INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-05-02, Technical Direction Document (TDD) No. E43-030-09-09-001, U.S. Environmental Protection Agency (EPA) Region 3 tasked Tetra Tech EM Inc. (Tetra Tech), to conduct a site inspection (SI) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in support of site assessment activities conducted at the Electric Storage Battery site located at 1901 West Allegheny Avenue in Philadelphia, Pennsylvania, 19134. The data collected during the SI will be used to determine the need for additional assessment or response activities at the site or in the surrounding area.

This trip report provides site background information in Section 2.0, describes investigation activities in Section 3.0 and summarizes the analytical data and provides conclusions in Section 4.0. All references cited in this report are listed in Section 5.0. All figures are included in Appendix A and a copy of the logbook documentation is provided in Appendix B.

2.0 SITE BACKGROUND

Former potential lead smelter sites nationwide were identified in an April 2001 article published in the American Journal of Public Health by Eckel, and others (Eckel study) (Reference [Ref.] 1). The majority of these former potential lead smelters operated prior to 1964 and closed before the current environmental regulations were instituted. As part of the Eckel study, soil samples were collected from several of the identified former lead smelter properties. Results from the analysis of these soil samples indicated that concentrations of lead exceeded EPA's soil screening level for lead in residential soils. The results of the Eckel study indicate that the air disposition of lead into soils from former smelter operations may present an ongoing public health concern due to exposure of residential populations, especially children to soils containing elevated concentrations of lead (Refs. 1, 2, and 3). One of the sites identified in the Eckel study was the Electric Storage Battery site formerly located 1901 West Allegheny Avenue in Philadelphia, Pennsylvania. Each former smelter property was given a number in Eckel's study. The Eckel study numbers for this site are 51 and 52 (Ref. 1).

The geographic coordinates of the former Electric Storage Battery facility are 40.0025° north latitude and 75.1525° west longitude on the Germantown, Pennsylvania and Philadelphia, Pennsylvania-New Jersey Quadrangles, 7.5 minute series, United States Geological Survey topographic maps (see Appendix A, Figure 1). The site is identified in EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database as the Electric Storage Battery site, CERCLIS ID Number PAN000306582 (Ref. 4).

Tetra Tech completed a windshield reconnaissance of the site and surrounding area on October 13, 2005. The smelter reportedly occupied one parcel of land to the north of West Allegheny Avenue and a second parcel to the south of West Allegheny Avenue. A large multi-story self storage structure appeared to encompass the entire northern parcel while the southern parcel consisted of a gated vacant lot consisting of overgrown vegetation, trash/debris and several groundwater monitoring wells. As a result of the northern parcel being completely developed with a structure, potential soil sample collection locations were not identified. Current ownership of the southern portion of the former smelter site could not be determined; therefore, access to the southern parcel for sample collection purposes was not obtained. The property is located in a mixed land use area with residential properties interspersed with small commercial type structures. Based on the close proximity to the former smelter site, Tetra Tech recommended a soil sampling event be conducted at the adjacent residential properties.

3.0 INVESTIGATION ACTIVITIES

On January 21, 2010, Tetra Tech collected in situ and ex situ soil samples from four adjacent vacant parcels formerly occupied by dwellings. The samples were analyzed for lead concentration using a Niton model XLt portable x-ray fluorescence (XRF) analyzer, calibrated to analyze bulk soil samples using a cadmium₁₀₉ radioactive source. XRF analysis was performed in accordance with EPA Emergency Response Team (ERT) Standard Operating Procedure (SOP) No. 1707, "X-MET 880 Field Portable X-Ray Fluorescence Operating Procedures" (Ref. 5).

Tetra Tech collected in situ soil samples from four randomly selected locations at a vacant parcel whose numerical street addresses were [REDACTED] and [REDACTED] West Hilton Street, five randomly selected locations at a vacant parcel whose numerical street address was [REDACTED] West Hilton Street, three randomly selected locations at a vacant parcel whose numerical street address was [REDACTED] West Willard Street, and three randomly selected locations at a vacant parcel whose numerical street address was [REDACTED] West Willard Street (see Appendix B, Logbook Documentation). The in situ lead concentrations recorded ranged from 153.0 parts per million (ppm) to 1,521.0 ppm. To confirm the results of the in situ readings, Tetra Tech collected soil from six locations for ex situ XRF analysis. The samples were collected from 0 to 6 inches below the ground surface. Each sample was placed in a plastic bag and transported to the Tetra Tech Boothwyn office for XRF sample preparation and analysis.

The ex situ sample preparation steps included:

- Placing a 50-gram aliquot of homogenized soil in a labeled baking cup
- Placing baking cup in oven for 2 hours at 350° F
- Screening the dried, 50-gram sample through a #10 mesh sieve (60 micron)
- Placing sieved sample in labeled XRF analysis cup
- Placing clean paper over sample in cup, place cotton ball over paper, and snap on the sample cup cover

Each XRF sample cup was placed into the portable XRF for analysis. Table 1 below summarizes the results, the sample locations are provided in Appendix A, Figure 3.

TABLE 1
XRF ANALYTICAL RESULTS SUMMARY

Sample ID	Location	Analyte	Result (ppm)
ESB-01	Vacant parcel located within residential neighborhood on the south side of West Hilton Street, between house number [REDACTED] and [REDACTED]	Lead	1,105
ESB-02	Vacant parcel located within residential neighborhood on the south side of West Hilton Street, between house number [REDACTED] and [REDACTED]	Lead	1,569
ESB-03	Center of vacant parcel located at [REDACTED] West Hilton Street, located in residential neighborhood.	Lead	1,103
ESB-04	Southern portion of vacant parcel located at [REDACTED] West Hilton Street, located in residential neighborhood.	Lead	1,442
ESB-05	East side of vacant parcel located at [REDACTED] West Willard Street, located in residential neighborhood.	Lead	1,229
ESB-06	South side of vacant parcel located at [REDACTED] West Willard Street, located in residential neighborhood.	Lead	1,229

Notes:

ppm = parts per million

XRF = X-Ray Fluorescence

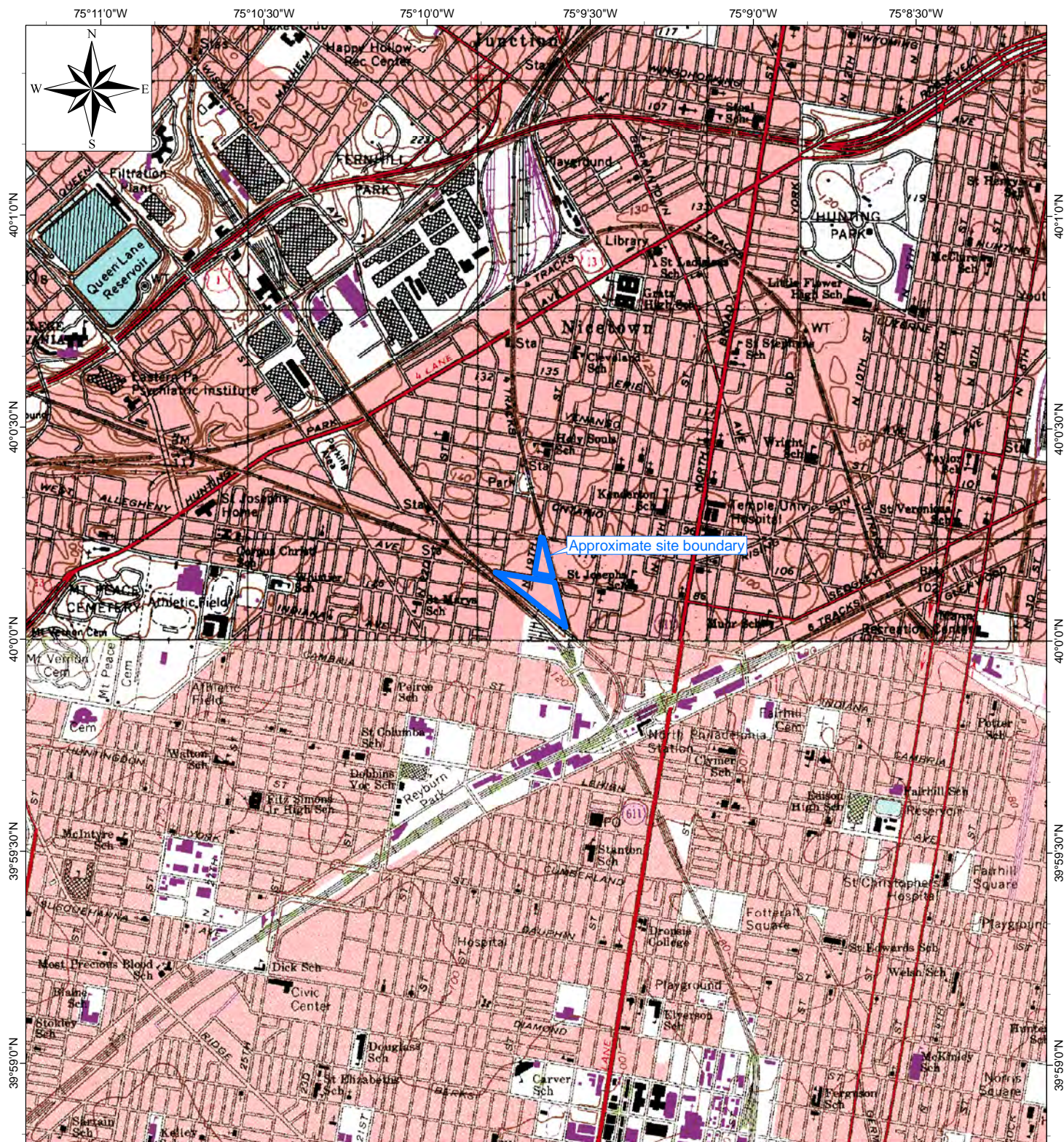
4.0 ANALYTICAL RESULTS SUMMARY AND CONCLUSIONS

EPA has established a regional screening level (RSL) for lead in residential soils (400 ppm) and industrial soils (800 ppm) (Ref. 6). The RSL can be used as a guidance level to identify sites that may pose potential risk and warrant additional assessment. The RSL established for residential soil of 400 ppm is a risk-based concentration calculated for a bare soil child's play area and the level established for industrial soil is the risk-based concentration for a non-play area (Ref. 7). In addition, EPA and the City of Philadelphia has determined that 800 ppm of lead is considered an appropriate background level for lead in soils within the City of Philadelphia. As shown in Table 1, the lead concentrations recorded for all six ex situ samples collected in the vicinity of the former Electric Storage Battery site exceed the residential soil (play area) RSL, the industrial soil (non-play area) RSL, and the City of Philadelphia's background lead level, with a maximum concentration detected of 1,569.0 ppm. The ex situ analytical results confirmed the results obtained during the in situ sampling, which indicated a maximum lead concentration in the vicinity of the former Electric Storage Battery site, of 1,521.0 ppm.

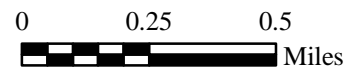
5.0 REFERENCES

1. Eckel, W.P., Rabinowitz, M.B., Foster, G.D. American Journal of Public Health. "Discovering Unrecognized Lead-Smelting Sites by Historical Methods". April 2001.
2. Pennsylvania Department of Health. Suspected Former Lead Smelter Sites: A Potential Risk Factor for Childhood Lead Poisoning. August 2004.
3. U.S. Environmental Protection Agency (EPA). Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. OSWER Directive 9355.4-12. July 14, 1994.
4. U.S. EPA. Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) database. On-Line Address: <http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm>
5. EPA. SOP 1707. "X-MET 880 Field Portable X-Ray Fluorescence Operating Procedures." ERT. Edison. December 1994.
6. EPA. Regional Screening Level Table Master April 2009. May 19, 2009. Available at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/pdf/master_sl_table_run_April2009.pdf
7. Agency for Toxic Substances & Disease Registry. Case Studies in Environmental Medicine (CSEM). "Lead Toxicity, What are the U.S. Standards for Lead Levels?". Available at: www.atsdr.cdc.gov/csem/lead/pb_standards2.html

APPENDIX A
FIGURES



Source: Modified from USGS 7.5-Minute Series Topographic Quadrangles: Germantown, Pennsylvania, 1997; Philadelphia, Pennsylvania-New Jersey, 1967, Photorevised 1994



Quadrangle Location = ■

Pennsylvania



Electric Storage Battery Site
Philadelphia, Pennsylvania

Figure 1
Site Location Map

TDD No. E43-030-09-09-001
EPA Contract No. EP-S3-05-02

Map created on February 3, 2010
by [redacted] Tetra Tech EM Inc.

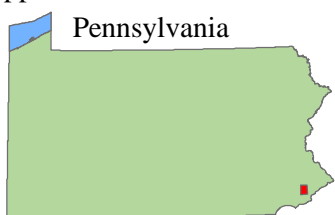




Source: Modified from City of Philadelphia aerial photography, City Planning Commission (PCPC) Department - GIS Division, 2008.

0 100 200 300
Feet

Approximate Site Location = ■



Electric Storage Battery Site Philadelphia, Pennsylvania

Figure 2
Site Layout Map



TDD No. E43-030-09-09-001
EPA Contract No. EP-S3-05-02

Map created on February 3, 2010
by [REDACTED] Tetra Tech EM Inc.

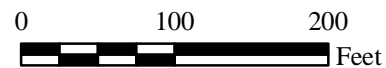




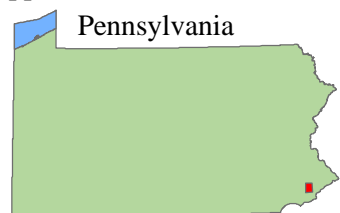
Legend

-  Soil sampling location
-  Approximate site boundary

Source: Modified from City of Philadelphia aerial photography, City Planning Commission (PCPC) Department - GIS Division, 2008.



Approximate Site Location = 



Electric Storage Battery Site
Philadelphia, Pennsylvania

Figure 3
Sampling Location Map

TDD No. E43-030-09-09-001
EPA Contract No. EP-S3-05-02

Map created on February 3, 2010
by  Tetra Tech EM Inc.



APPENDIX B
LOGBOOK DOCUMENTATION

Electric Storage Battery

11/21/2010, Thursday, Clear, Sunny, 45°F

1300 START arrival @ site and meet

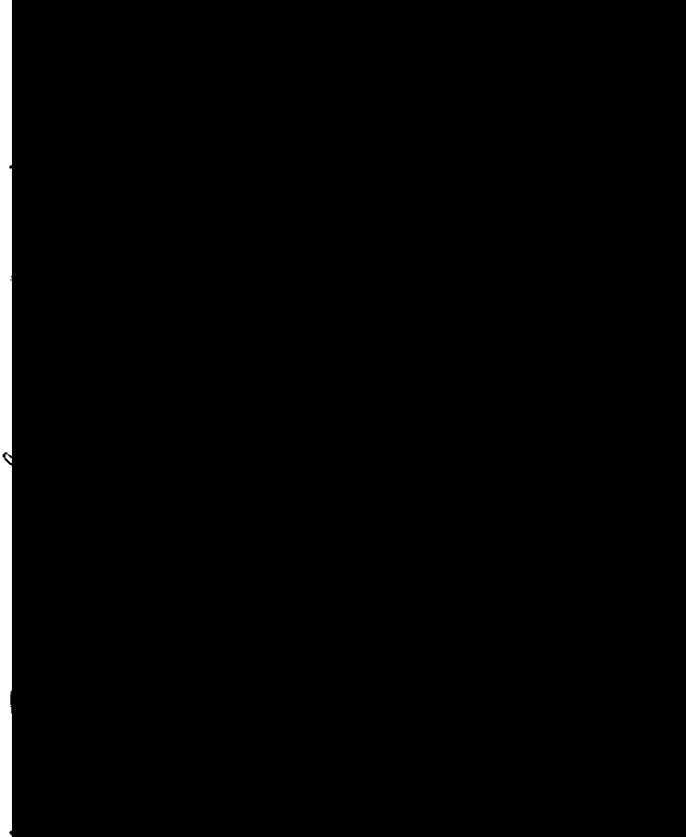
WAM Rajkowski,

1310 START shows WAM Rajkowski the

location of the former smelter and

discuss possible areas to screen

with XRF.



Location	Element (ppm)	Ascorbic = below detection limit (34.6)
1	377 = Lead	
2	631 (+/- 40)	As = below DL
3	701 (+/- 38.8)	As = 49.6 +/- 29.1
4	634.2	As = below DL

1/21/10 - Electric Storage Battery (cont'd)
 - Sample ESB-01 collected from
 location #3 @ 1335
 - Sample ESB-02 collected from
 location #4 @ 1340

Ex situ Sample Results

Location	Time	Result (ppm)
[REDACTED]	13:35	1105 (+/- 36)
[REDACTED]	13:40	1509 (+/- 45)

1345 START moved to next sample location
 which consists of a vacant lot

[REDACTED] Situated between
 two dwellings
 Hilton Street.



1/21/10 - Electric Storage Battery (Cont'd)

Location	Ex situ Instal. Readings (ppm)	Sample
A	153	ArS = below DL
B	415 (+/- 23.8)	ArS = below DL
C	1521	ArS = below DL
D	48.1 (+/- 22.9)	ArS = below DL ESB-03 @ 1350
E	567.5 (+/- 35.4)	ArS = below DL ESB-04 @ 1355

Ex situ Sample Results

Location	Time	Result (ppm)
[REDACTED]	1350	1103 (+/- 37.0)
[REDACTED]	1355	1442 (+/- 43.0)

1357 START moved to next location.

- a vacant lot (192
 situated between
 N Willard Street.



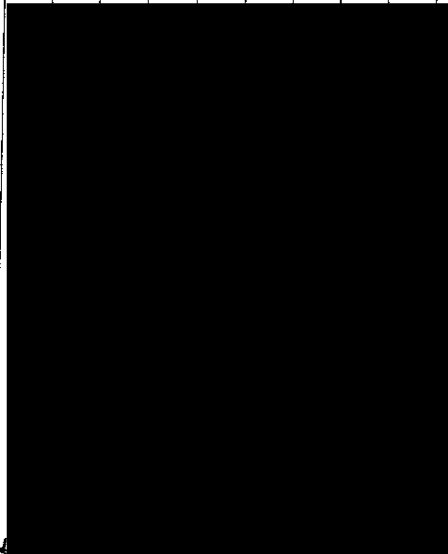
1/21/10 - Electronic Storage Battery (Cont'd)

Locations	Drive Sample Results (ppm)	Exit Results
AA	171	
BB	641 (+/- 30.6)	ESB-050
CC	694 (+/- 30.7)	1400

Exit Results

Location	Drive	Results (ppm)
ESB-05	1400	1229 (+/- 37)

1405 START moved to next location, the [redacted] Willard St.



Location	Drive Results (ppm)	Exit Results
A	509.7	N/A

1410 START moved to next location, a vacant lot (1914 W. Willard St).

1/21/10 - Electronic Storage Battery (Cont'd)

Willard Street



1!

Locations	Drive Results (ppm)	Exit Results
A	420.8 (+/- 34.6)	N/A
B	371.6 (+/- 30)	N/A
C	420.2	ESB-060 1415

Exit Results

Location	Drive	Results (ppm)
[redacted]	1415	1229 (+/- 39)

1425 START moved to abandoned lot across W. Allegheny Ave (portion of the former structure); several MWs observed.

1/21/10 - Electronic Storage Battery (Cont'd)Insitel Readings

<u>Location</u>	<u>Results (ppm)</u>	<u>Disiter</u>
A	199.0	N/A
B	128.0	N/A
C	328.1 (+/- 42.1)	N/A

